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ESTIMATE OF PLANNING SURVEY EXPENDITURES  
FOR PERIOD BEGINNING JANUARY 1, 1963  
AND ENDING DECEMBER 31, 1963

MONTANA STATE HIGHWAY COMMISSION  
IN COOPERATION WITH  
U.S. DEPARTMENT OF COMMERCE  
BUREAU OF PUBLIC ROADS

Submitted November 23, 1962

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ESTIMATE OF PLANNING SURVEY EXPENDITURES  
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MONTANA STATE HIGHWAY COMMISSION  
PLANNING SURVEY DIVISION  
In cooperation with  
U.S. DEPARTMENT OF COMMERCE  
BUREAU OF PUBLIC ROADS

November 23, 1962

ESTIMATE OF ACTIVITIES AND EXPENDITURES FOR THE PERIOD  
BEGINNING JANUARY 1, 1963 AND ENDING DECEMBER 31, 1963  
PROJECT HPS - 1(23)

1. ROAD INVENTORY AND FIELD CHECKING OF MAPS

After preliminary maps have been prepared from aerial photographs and other source material, the maps are taken into the field for verification of accuracy of the road network and to record dwellings and other culture. During this operation, road types and dimensions are also recorded for permanent records. As part of this activity, counties and other road building agencies are contacted annually to determine what construction has taken place during the year on roads and streets not on the state highway systems. In past years, two crews have been employed during the summer months on this project. It is planned that two additional crews will be employed during 1963 in order to accelerate progress in this activity.

ESTIMATED EXPENDITURES           \$30,000

2. BRIDGE INVENTORY

A field inspection is made every two years of all bridges on the state highway systems. The purpose is to maintain an up-to-date record of the dimensions and condition of these bridges. The field work on this project will start again during 1963, and considerable work will be done during the year in preparing the necessary records and reports.

ESTIMATED EXPENDITURES           \$ 8,000

3. SUFFICIENCY RATINGS

A sufficiency rating report is prepared each year for all projects on the Primary System. The results are used for determining the percentages for distributing construction funds to the financial districts. The report also lists projects according to priority ratings for guidance in programming. The present formula has been in effect for many years without revision and consideration will be given to devising a new formula which will give consideration to factors such as maintenance costs and accident rates which are not considered in the present formula.

ESTIMATED EXPENDITURES           \$ 3,000



#### 4. TRUCK AND BUS INVENTORY

This activity consists of the recording of registration data for trucks, buses and trailers for use in preparing annual statistical reports. The Gross Vehicle Weight Tax Division receives copies of registration certificates for these vehicles and transcribes pertinent data to IBM cards. Certain data are extracted for use of the Planning Survey Division, and the cost of punching the IBM cards is divided between the two divisions in proportion to the number of columns used for each purpose.

ESTIMATED EXPENDITURES \$ 3,000

#### 5. COUNTY MAPS

This activity includes the cost of preparing new county maps and revising older maps to show changes which have come to the attention of the department. As a part of this activity, it is necessary to acquire copies of township plats from the U.S. Public Survey Office. Additional plats of this type will be acquired to complete our files. A small amount of additional aerial photography will be acquired from governmental sources. In special instances, aerial photography will be obtained through use of the department-owned airplane which is equipped for this service.

ESTIMATED EXPENDITURES \$15,000

#### 6. STATE MAPS

This activity includes the annual revision of the official state highway map and the preparation of other special state maps. No cost is included for the printing of the state highway map since this is accomplished out of regular state funds, without Federal participation.

ESTIMATED EXPENDITURES \$ 3,000

#### 7. STRAIGHT LINE DIAGRAMS

These diagrams contain a complete historical record of construction on all state highways. They show the most important details of highway construction as taken from completed road plans. They also take the place of the RL-7 form of the Road Life Study. It is planned that consideration will be given to the transcribing of data on a new form with a different scale.

ESTIMATED EXPENDITURES \$15,000

#### 8. CITY PLATS

Plats of all incorporated cities are prepared in sizes of  $8\frac{1}{2}$  x 11 inches and 17 x 22 inches. Plats on the smaller scale are bound in books for ease of reference. A new book of plats was prepared and distributed recently, so activities during the period of this estimate should be confined to minor revisions.

ESTIMATED EXPENDITURES \$5,000





## 9. CITY PHOTOGRAPHS

During the past year, aerial photography was obtained for all incorporated cities in the state. These photographs have been developed, and necessary reference data have been placed on the photographs. Plates of these photographs will be prepared during the coming year, and it is planned that a new book will be prepared wherein both the basic plats and the photographs will be included for convenient reference. During the coming year, it is also planned that photographs and plats will be prepared for unincorporated places of importance. There is considerable demand for material of this type.

ESTIMATED EXPENDITURES           \$ 5,000

## 10. AUTOMATIC COUNTERS

These permanent counters are located at strategic points on the state highway systems throughout the state. New installations are made periodically as the need develops, and some of the older equipment is replaced with modern types. It is also necessary to replace some installations on highways where new construction takes place. A new urban counter is being installed in Great Falls to obtain data for a typical collector street. The counter in Billings is to be replaced by a radar type for the reason that the increased volume of traffic and the backup of traffic because of signals have destroyed the effectiveness of this counter. A new installation is planned in the vicinity of Glacier Park on U.S. 2. This item includes maintenance expense, repairs and replacement of parts as well as the cost of purchase and installation of new equipment.

ESTIMATED EXPENDITURES           \$15,000

## 11. PORTABLE COUNTERS

Portable counters are used at points where periodic counts are required. They are used in the regular traffic counting program as well as for the recording of special counts. During the past year, one man has been recording blanket counts for entire counties. It is planned that one additional man will be assigned to this work during the coming year in order to expedite this type of coverage. Approximately 15 additional portable counters will be required for this purpose. This category also includes the cost of necessary maintenance, repairs and replacement of parts for the portable counters.

ESTIMATED EXPENDITURES           \$10,000

## 12. TRAFFIC COUNTS - REGULAR

Under this activity, four men obtain traffic counts and classify traffic at specified points on state highways and county roads throughout the state. Most of the counts are obtained through use of portable counters; however, visual counts and classifications are made at strategic points. This activity



will be continued on the normal basis; however, it is planned that blanket coverage of a few counties will be made through the services of two men, as mentioned under Item 11.

ESTIMATED EXPENDITURES \$70,000

### 13. REGULAR ACCIDENT STUDY

Over a period of years, accident data for the rural Primary System have been obtained from highway patrol records and reported in an annual publication. The data are reported by control sections and classified according to the type of accident and estimated cost. This activity will be continued in the normal manner.

ESTIMATED EXPENDITURES \$ 5,000

### 14. INTERSTATE ACCIDENT STUDY - PHASE I

Under this project, accident data are recorded for newly opened sections of the Interstate System and the data are compared with similar sections of existing highway not built to Interstate System standards. The objective is to evaluate the change in accident rates which occur with the usage of higher-standard Interstate highway facilities.

ESTIMATED EXPENDITURES \$ 3,000

### 15. INTERSTATE ACCIDENT STUDY - PHASE II

This phase of the accident study is being conducted by the Traffic Engineer's office. It consists of a thorough investigation of accidents which occur on new sections of Interstate highway for the purpose of determining what design elements may contribute to increases or decreases in the accident rate.

ESTIMATED EXPENDITURES \$15,000

### 16. SPEED STUDIES

Speed studies are conducted twice a year on selected sections of the Interstate System. Five sections are located on newly constructed highway and two sections are located on older sections of highway. The objective of this project is to obtain a record of actual speeds and also to determine what speed trends may exist. This activity will be continued on the regular basis.

ESTIMATED EXPENDITURES \$2,000

### 17. SPECIAL TRAFFIC STUDIES

During the course of a year, numerous requests are received for special traffic data which are not available through the regular activities. This item



also includes special origin-destination surveys which are made as occasion requires. There is considerable activity and substantial expenditures under this category.

ESTIMATED EXPENDITURES \$15,000

#### 18. URBAN TRANSPORTATION STUDIES

At the present time, urban transportation studies are being conducted in Billings and Great Falls. It is expected that the Billings survey will be completed during the early part of 1963, and \$10,000 is being included in this estimate for completion of this survey. The Great Falls survey will extend to about the end of 1963, and it is estimated that \$45,000 will be required to accomplish the remaining work on this study. At the present time, no other urban transportation surveys are contemplated; however, it is possible that additional work will develop in this important field during the year. An allowance of \$20,000 is being made for possible work in this category.

ESTIMATED EXPENDITURES \$75,000

#### 19. FISCAL STUDIES - STATE

Under this project, fiscal data concerning state highway operations are compiled and presented in annual reports. This work will continue on the normal basis.

ESTIMATED EXPENDITURES \$ 5,000

#### 20. FISCAL STUDIES - LOCAL

Fiscal data concerning expenditures on city streets and county roads and related functions are also compiled on an annual basis and included in reports on this subject. This activity will also continue on the regular basis.

ESTIMATED EXPENDITURES \$ 3,000

#### 21. ROAD LIFE, ROAD LOG and SM TABLES

These are inter-related studies pertaining to financial and statistical records of highway construction and maintenance betterments. The Road Life Study is a continuing record of highway construction over the time that state highways have been in existence. Periodic summaries are made of the data compiled in this project. The Road Log is an annual publication containing a description of the characteristics of each project on each route. Detailed summaries are made of the highway mileage by county, city, reservation status, year built and similar data of interest. The SM Tables contain an annual report of mileage existing at the beginning of the year, changes made during the year and the mileage existing at the end of the year. It is planned that additional attention will be devoted to the Road Life Study in order to keep current the special study pertaining to U.S. 10 throughout the state.

ESTIMATED EXPENDITURES \$25,000



## 22. CONSTRUCTION STATISTICS

This project consists of the analysis of construction contracts in order to maintain a quarterly construction price index and to prepare an annual summary of expenditures for each highway system, classified according to cost items, area of expenditure and other matters of interest. This will continue on the regular basis.

ESTIMATED EXPENDITURES \$ 3,000

## 23. ECONOMIC HIGHWAY STUDIES

Under this category, economic analyses are made of alternate highway locations where the situation is of sufficient importance to warrant more than a basic engineering study. Such analyses are made principally for the Interstate System; however, there are occasions on the Primary and Secondary systems where special investigations are necessary. The expenditures charged to this item consist mainly of traffic analyses, collection of pertinent economic data and the preparation of the final report. Engineering and right-of-way phases are charged against other than highway planning funds. It is expected that the activity in this category will equal that of previous years.

ESTIMATED EXPENDITURES \$ 6,000

## 24. INTERSTATE PTW STUDY

During 1961, a special inventory was made of the entire Interstate System for the purpose of recording pertinent data concerning the status of the existing system. These data were recorded on special forms so that they could be reproduced for the use of State and BPR officials who were interested in this matter. Any revisions that occurred during 1962 as the result of new construction or other reported changes were recorded on the forms but no new inventory was made. It is planned that a complete inventory will be made again during 1963 so that a record may be obtained of any revisions that may have occurred since 1961 but were not revealed from regular sources.

ESTIMATED EXPENDITURES \$10,000

## 25. RIGHT-OF-WAY STUDIES

During the past year, special right-of-way studies were made regarding the change in value of land and improvements as affected by right-of-way requirements. Special attention was granted to the change in the value of land and improvements for which severance damages had been paid. Reports were prepared for nine instances. It is planned that this activity will continue during the period of this estimate to include the investigation of additional instances. A study will also be made of the change in values of land in the vicinity of interchanges.

ESTIMATED EXPENDITURES \$15,000





#### 26. HIGHWAY LAWS STUDIES

During 1962, a book was prepared to consolidate in one volume the state laws pertaining to highways. This booklet was distributed to state highway and BPR personnel who would benefit from such a publication. As the next step, it is planned that these laws will be analyzed by competent legal authorities to determine what revisions to existing law would be desirable in the interest of eliminating conflicting or ambiguous sections and improving the quality of the law. At this time, it is not possible to make a sound estimate of the anticipated cost; however, it is believed that the following estimate will be adequate.

ESTIMATED EXPENDITURES \$10,000

#### 27. SOIL SAMPLE TESTING

This is a cooperative project in conjunction with the Soil Conservation Service wherein the SCS takes field samples of soil and underlying strata and the highway testing laboratory analyzes these samples. The results are reported for the use and mutual benefit of both agencies. Only minor expenditures are expected under this item.

ESTIMATED EXPENDITURES \$ 1,000

#### 28. ELECTRO-CHEMICAL AGGREGATE STUDIES

This project involves an investigation of the affinity between aggregate materials and bituminous materials of different types. This project has been under consideration for some time, but the lack of qualified personnel has delayed actual work on the investigation. Qualified personnel have been employed recently, and it is expected that this project will progress satisfactorily during the period of this estimate.

ESTIMATED EXPENDITURES \$25,000

#### 29. BENEFICIATION OF AGGREGATES

This is another physical research project which has been under consideration by the testing laboratory. The objective is to investigate means of improving the quality of substandard materials for use in highway construction. This project was approved during 1962; however, progress has been delayed because of a shortage of qualified personnel. It is believed that substantial progress on this project will be made during 1963.

ESTIMATED EXPENDITURES \$20,000

#### 30. NUCLEAR MEASUREMENT PROCESS

The testing laboratory has suggested that a research project be established to investigate the use of nuclear equipment in measuring density, moisture and



other features of highway construction. The nuclear method has been investigated in other states and found to be feasible. Under the Montana project, it is proposed that one nuclear meter be purchased and used in actual field tests for a period of about six months to determine its effectiveness and comparative results in relationship to existing methods.

ESTIMATED EXPENDITURES \$10,000

### 31. INVENTORY OF TRAFFIC CONTROL DEVICES

During 1962, an inventory was made of traffic control devices on sections of Primary System highway from Missoula to Kalispell and from Havre to the North Dakota line. This inventory disclosed valuable information concerning the status of present signing and the need for replacements. It is now proposed that this type of inventory be made for the entire Primary System with the objective of programming construction projects for the replacement of substandard items. Any replacement projects would be financed from regular construction funds.

ESTIMATED EXPENDITURES \$30,000

### 32. TRAFFIC CONTROL MANUAL

This project involves the preparation of a manual of traffic control devices and signs for use in this state. The national uniform manual will be used as a model, with such revisions as may be necessary to conform to conditions in this state. The manual will be recommended as a guide for cities, counties and other agencies as well as the State Highway Department.

ESTIMATED EXPENDITURES \$ 4,000

### 33. WRONG-WAY RAMP USAGE

This study was conducted at several interchanges last year for the purpose of determining the extent of wrong-way movement on interchange ramps. A progress report was released during October of 1962 describing the techniques used and some of the difficulties encountered. Preliminary results were also reported in this book. It is planned that further investigation will be made during 1963 along this line, with the possibility of using photographic methods for recording wrong-way movements.

ESTIMATED EXPENDITURES \$ 3,000

### 34. CONSTRUCTION MANUAL

It has been recommended that a manual on construction practices be prepared for the guidance of all persons concerned. The last manual on this subject was prepared in the 1930's, so it is evident that such a manual



is badly needed. This item includes the cost of compiling the necessary information, writing the book and the printing of an adequate number of copies.

ESTIMATED EXPENDITURES \$ 4,000

#### 25. LOADOMETER SURVEY

This is a continuing program wherein trucks and trailers are weighed and classified at specified stations on the Primary System. This survey is conducted each year during the month of August. The results of the survey are published in a report in the form of standard tables for use in national summaries. The data are also used for design purposes. Certain weigh stations are approved as research stations for which the weighing facilities may be financed from highway planning funds. At the present time, it does not appear that any new stations will be constructed with highway planning funds during 1963, but there will probably be some payment on stations now under construction.

All truck weighing activities, exclusive of the Loadometer Survey, have been placed under the jurisdiction of the Gross Vehicle Weight Tax Division. This division plans to record all weight and similar data on prescribed forms for each vehicle. This procedure will provide an excellent and comprehensive source of statistical data that has not been available heretofore. In an effort to utilize this information, it is planned that an HPS project will be developed to transfer the data from the sheets to IBM cards for use in summaries and analyses of various types for statistical and planning purposes. Since the volume of weigh sheets will probably be overwhelming, it is expected that some type of sampling process will be devised to produce the necessary information.

ESTIMATED EXPENDITURES \$30,000

#### 26. TOURIST SURVEY

As a Section 210 Economic Impact Study, a tourist survey was conducted during 1958 to determine the effect of tourism on the economy of the state. In the years since 1958, a limited survey has been made each summer in order to bring the 1958 information up to date. It is planned that another comprehensive tourist survey will be conducted during 1963. This survey will follow the general pattern of the 1958 survey, with certain revisions and additions to provide information which was not fully covered during the 1958 survey. The planning of this survey will be developed in conjunction with the Montana State University, State Advertising Division and numerous commercial groups and associations having an interest in this matter. The Bureau of Business and Economic Research of Montana State University will be assigned primary responsibility for the survey; however, it is expected that the Planning Survey Division will conduct the necessary roadside interviews to obtain data pertaining to highway usage. Preliminary discussions indicate that the various commercial groups will assist to considerable extent in phases of this survey pertaining to their operations.

ESTIMATED EXPENDITURES \$50,000



#### 37. DRAINAGE AREA FLOW PROJECT

This project has been underway for several years. The primary objective is to develop information concerning runoff from dry drainage courses or other areas for which adequate flow information is not available. The results are used in determining proper bridge and culvert installations. The work is performed by the U.S. Geological Survey with financing from highway planning funds. It is generally agreed that this project can be expanded to include further research on these matters, and this estimate has been increased by \$8,000 over the current financing.

ESTIMATED EXPENDITURES            \$24,000

#### 38. CITY PLANNING-GENERAL

This category includes the cost of activities in connection with city planning which are not covered under the category for urban transportation surveys. Relatively moderate expenditures are expected.

ESTIMATED EXPENDITURES            \$ 5,000

#### 39. PUBLIC HEARINGS

This item includes the cost of preparing exhibits or compiling data for use at public hearings.

ESTIMATED EXPENDITURES            \$ 1,000

#### 40. ELECTRONIC COMPUTER RESEARCH

This category includes the cost of developing new programs and adapting existing programs for the electronic computers in use in the department. A substantial part of the cost is devoted to the investigation of new computer methods which will replace present hand work. The Planning Survey Division has benefited greatly from research into methods for utilizing computers to perform functions that have been done by hand in the past.

ESTIMATED EXPENDITURES            \$20,000

#### 41. MISCELLANEOUS STUDIES

This category is provided for the cost of studies of different types which cannot be foreseen or which are not of sufficient importance to be included as a separate item in this estimate.

ESTIMATED EXPENDITURES            \$ 3,000

#### 42. BYPASS STUDIES

Many other states have conducted investigations of the effect on communities and cities where new highways have been built on locations bypassing these places. Such studies have shown predominantly that the





economic effect on these places has been beneficial rather than detrimental. Most states conducting these surveys have had access to sales tax figures for measuring the degree of change in economic activity. It is planned that such surveys will be made for a few cities in Montana where new highways have bypassed these cities. In the absence of sales tax data, reference will probably have to be made to such indicators as employment figures, gross sales as developed from income tax returns, motor fuel sales, assessed values of property or other applicable data. In order to eliminate the stigma of possible bias, it is planned that such surveys will be assigned to a college or university.

ESTIMATED EXPENDITURES \$15,000

#### 43. HIGHWAY LIBRARY

At the present time, most books and reports pertaining to highway matters are filed in different departments in a random manner. Certain publications are segregated for special reference, but generally most of the material is read as a matter of interest at the moment, but no effort is made to prepare a catalog for future reference. It is generally agreed that a central library would be very beneficial where all publications and reports, both incoming and outgoing, could be assembled, cataloged and filed. Since the floor weight would be substantial, such a library would probably have to be located on the ground floor where support would be adequate. It is hoped that space and trained personnel can be obtained for the establishment of such a library.

ESTIMATED EXPENDITURES \$10,000

#### 44. MOTOR VEHICLE USE STUDY

During 1952 and 1953, a motor vehicle use study was conducted in this state for the purpose of developing information concerning highway usage. The results of this survey have been very beneficial in general highway planning, cost allocation studies, legislative conferences and similar applications. Since the data from this survey are about ten years old, it is felt that a new survey of this type should be made. The procedure is to interview persons in a sample of residences selected throughout the state in order to obtain representative coverage. The results are summarized in a series of tables showing travel on various highway systems classified by place of residence, occupation, trip length, purpose and related categories.

ESTIMATED EXPENDITURES \$40,000

#### 45. ROADSIDE SEEDING

State law provides that all areas disturbed by construction must be reseeded with ground cover of a suitable type. Some reseeded has been done to date in connection with highway construction, with variable results. It is proposed that Montana State College be assigned a research project to



develop reseeding methods that would give the best results depending on soil type, moisture and other conditions prevailing in different sections of the state.

ESTIMATED EXPENDITURES \$10,000

#### 46. OTHER RESEARCH PROJECTS

The following is an outline of different research projects which have been suggested as having merit but which have not evolved to the point that definite plans have been formulated. They are listed here as possibilities, but no money is being provided for them at this time. In the event that projects along these lines are developed at a later date they will be submitted either individually or as a group as occasion requires.

##### CONSTRUCTION AREA ACCIDENTS

An investigation should be made of accidents occurring in areas of highway construction in order to determine the cause of the accidents and what steps should be taken to improve the situation.

##### ARCHAEOLOGICAL INVESTIGATION

This project would consist of an investigation of areas of new highway construction to determine whether archaeological material of value could be salvaged from the area prior to construction. It is presumed that a project of this type would be assigned to a college, university or museum.

##### SNOW AVALANCHES

Under this project, research would be performed for the purpose of determining the causes of snow avalanches, contributing conditions, possible remedies and other subjects relating to this field. It is presumed that this work would be assigned to a college or governmental agency.

##### DRAINAGE AND STREAM FLOW

In addition to the present U.S.G.S. project for stream flow, it has been suggested that special research in this state would be appropriate in connection with ice damage to structures, the effect of stream channel changes, and the cause of scouring around bridge piers. This type of research could be conducted within the department or by other agencies.

##### COST TO DETOUR TRAFFIC

In many instances, a decision must be made whether it would be best to reconstruct a new highway on the present location or to construct the highway on an entirely new location. If the new highway is constructed on the same location, consideration must be given to the extra cost to the contractor for maintaining the traffic flow during construction and also the extra cost to the highway user who must travel under hazardous conditions, over rough roadbeds and generally over greater distances. If the highway is constructed



on entirely new location, consideration must be given to the additional cost of right-of-way and the loss of salvage value of any of the present roadbed. Research into this subject would help to develop knowledge concerning these problems.

#### INTERCHANGE DESIGN

It has been suggested that research would be appropriate into the economic effects of designing a single interchange for a small community or dividing the interchange into two segments. An example would be a single diamond interchange in close proximity to the center of the city or two half-diamond interchanges to be located on the existing approaches to the city.

#### CONCRETE CONTROL

Special research has been suggested in connection with concrete control to determine what steps might be taken to improve the quality of the final product. This work could be accomplished by the testing laboratory or some college.

#### U.S.G.S. MAPPING

Topographical maps of many areas of the state have never been prepared by the U.S. Geological Survey. It will be many years under the regular mapping program of this agency before these areas will be covered. Special surveying and mapping will be done by this agency if the funds are provided from some other source. Special surveys of this type should be eligible for financing with highway planning funds if the need is established.

#### 47. UNDISTRIBUTED OVERHEAD

This category includes expenditures for various items which cannot be segregated or distributed into the other categories. Examples include stenographic salaries, telephone service, subscriptions to publications and services, office supplies, postage, and a substantial portion of the salary of the Planning Survey Manager. It is expected that the cost of this item will be about equal to the previous year.

ESTIMATED EXPENDITURES	\$20,000
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# S U M M A R Y

ITEM NO.	DESCRIPTION	AMOUNT
1.	Road Inventory and Field Checking of Maps	\$ 30,000
2.	Bridge Inventory	8,000
3.	Sufficiency Ratings	3,000
4.	Truck and Bus Inventory	3,000
5.	County Maps	15,000
6.	State Maps	3,000
7.	Straight Line Diagrams	15,000
8.	City Plats	5,000
9.	City Photographs	5,000
10.	Automatic Counters	15,000
11.	Portable Counters	10,000
12.	Traffic Counts - Regular	70,000
13.	Regular Accident Study	5,000
14.	Interstate Accident Study - Phase I	3,000
15.	Interstate Accident Study - Phase II	15,000
16.	Speed Studies	2,000
17.	Special Traffic Studies	15,000
18.	Urban Transportation Studies	75,000
19.	Fiscal Studies - State	5,000
20.	Fiscal Studies - Local	3,000
21.	Road Life, Road Log and SM Tables	25,000
22.	Construction Statistics	3,000
23.	Economic Highway Studies	6,000
24.	Interstate PTW Study	10,000
25.	Right-of-Way Studies	15,000
26.	Highway Laws Studies	10,000
27.	Soil Sample Testing	1,000
28.	Electro-Chemical Aggregate Studies	25,000
29.	Beneficiation of Aggregates	20,000
30.	Nuclear Measurement Process	10,000
31.	Inventory of Traffic Control Devices	30,000
32.	Traffic Control Manual	4,000
33.	Wrong-Way Usage	3,000
34.	Construction Manual	4,000
35.	Loadometer Survey	30,000
36.	Tourist Survey	50,000
37.	Drainage Area Flow Project	24,000
38.	City Planning - General	5,000
39.	Public Hearings	1,000
40.	Electronic Computer Research	20,000
41.	Miscellaneous Studies	3,000
42.	Bypass Studies	15,000
43.	Highway Library	10,000
44.	Motor Vehicle Use Study	40,000
45.	Roadside Seeding	10,000





# S U M M A R Y (continued)

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>AMOUNT</u>
46.	Other Research Projects Construction Area Accidents Archaeological Investigation Snow Avalanches Drainage and Stream Flow Cost to Detour Traffic Interchange Design Concrete Control U.S.G.S. Mapping	
47.	Undistributed Overhead	<u>20,000</u>
	TOTAL ESTIMATED EXPENDITURES FROM JANUARY 1, 1963 TO DECEMBER 31, 1963	\$699,000

RECOMMENDED FOR APPROVAL:

APPROVED:

\_\_\_\_\_  
C. W. Duggan  
Highway Engineer  
Bureau of Public Roads

\_\_\_\_\_  
Fred Quinnell, Jr.  
State Highway Engineer





